

**Amendments To The Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended) A method for detecting a binding event between at least one binder and members of a receptor array, comprising the steps of:
  - (a) exposing a plurality of unbound binder-free receptors to at least one binder having an chemically associated and nonradioactive element detectable by X-ray fluorescence to form at least one bound receptor-binder complex;
  - (b) separating washing said bound receptor-binder complex to remove unbound binder from said bound receptor-binder complex;
  - (c) arraying said bound receptor-binder complex onto a substrate; and
  - (d) detecting a binding event by exposing said bound receptor-binder complex to X-ray radiation in order to generate an X-ray fluorescence signal generated by from said detectable element in said bound receptor-binder complex members.
2. (original) The method of claim 1, wherein the receptor comprises at least one organic compound.
3. (original) The method of claim 1, wherein the receptor comprises at least one oligomer.
4. (original) The method of claim 1, wherein the receptor comprises at least one polymer.
5. (original) The method of claim 1, wherein the receptor is selected from the group consisting of esters, amines, imines, aldehydes, ketones, amides, ethers, olefins, halogenated organic molecules, antibodies, drugs, steroids, amino acids, nucleic acids,

oligomers, oligonucleotides, oligosaccharides, oligopeptides, polyolefins, polyurethanes, polyesters, polycarbonates, polyamines, polyamides, halogenated polymers, polypeptides, polynucleotides, polysaccharides, nucleic acids, cell membrane receptors, viruses, cells, cellular membranes, and organelles.

6. (original) The method of claim 1, wherein the binder comprises at least one organic molecule.

7. (original) The method of claim 1, wherein the binder comprises at least one oligomer.

8. (original) The method of claim 1, wherein the binder comprises at least one polymer.

9. (original) The method of claim 1, wherein the binder comprises at least one metal ion.

10. (original) The method of claim 4, wherein the binder is selected from the group consisting of esters, amines, imines, aldehydes, ketones, amides, ethers, olefins, halogenated organic molecules, antibodies, drugs, hormones, steroids, amino acids, nucleic acids, oligomers, oligonucleotides, oligosaccharides, oligopeptides, polyolefins, polyurethanes, polyesters, polycarbonates, polyamines, polyamides, halogenated polymers, polypeptides, polynucleotides, polysaccharides, nucleic acids, metal ions, anions, complex ions, oxoanions, polyoxoanions, phosphate, organophosphates, sulfate, organosulfates, zirconate, agonists and antagonists for cell membrane receptors, toxins, enzymes, enzyme substrates, cofactors, and antibodies.

11. (currently amended) A method for detecting chemical binding between at least one binder and members of a receptor array, comprising the steps of:

(a) exposing a plurality of unbound binder-free receptors to at least one untagged binder having an chemically associated and nonradioactive element detectable by X-ray fluorescence to form at least one bound receptor;

(b) separating washing said bound receptor;

(c) arraying said bound receptor onto a substrate; and  
(d) detecting an X-ray fluorescence signal generated by said detectable element in said bound receptor members.

12. (previously presented) The method of claim 11, wherein the receptor comprises at least one organic compound.

13. (previously presented) The method of claim 11, wherein the receptor comprises at least one oligomer.

14. (previously presented) The method of claim 11, wherein the receptor comprises at least one polymer.

15. (previously presented) The method of claim 11, wherein the receptor is selected from the group consisting of esters, amines, imines, aldehydes, ketones, amides, ethers, olefins, halogenated organic molecules, antibodies, drugs, steroids, amino acids, nucleic acids, polyurethanes, polyesters, polycarbonates, polyamines, polyamides, halogenated polymers, polypeptides, polynucleotides, polysaccharides, nucleic acids, cell membrane receptors, viruses, cells, cellular membranes, and organelles.

16. (previously presented) The method of claim 11, wherein the binder comprises at least one organic molecule.

17. (previously presented) The method of claim 11, wherein the binder comprises at least one oligomer.

18. (previously presented) The method of claim 11, wherein the binder comprises at least one polymer.

19. (previously presented) The method of claim 11, wherein the binder comprises at least one metal ion.

20. (previously presented) The method of claim 11, wherein the binder is selected from the group consisting of esters, amines, imines, aldehydes, ketones, amides, ethers, olefins, halogenated organic molecules, antibodies, drugs, hormones, steroids, amino acids, nucleic acids, oligomers, oligonucleotides, oligosaccharides, oligopeptides, polyolefins, polyurethanes, polyesters, polycarbonates, polyamines, polyamides, halogenated polymers, polypeptides, polynucleotides, polysaccharides, nucleic acids, metal ions, anions, complex ions, oxoanions, polyoxoanions, phosphate, organophosphates, sulfate, organosulfates, zirconate, agonists and antagonists for cell membrane receptors, toxins, enzymes, enzyme substrates, cofactors, and antibodies.